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ABSTRACT

This study investigated the effects of goals and goal-progress feedback on children's reading comprehension self-efficacy and skill. Subjects, 30 lower-middle-class students from 2 fifth-grade classes in an elementary school who did not experience excessive decoding problems and who regularly received remedial reading instruction, were randomly assigned to 1 of 3 treatment groups: product goal, process goal, or a combination of process goal and progress feedback. Subjects received daily 35-minute training for 15 school days, working on instructional material covering comprehension of main ideas. Results indicated that (1) the combined treatment group demonstrated significantly higher performance on the self-efficacy and skill tests than the process-goal and product-goal conditions; and (2) combined and process-goal conditions judged perceived progress in strategy learning higher than product-goal subjects. Findings suggest that remedial readers benefited from explicit feedback on their mastery of a comprehension strategy. (One table of data is included; 23 references are attached.) (RS)

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Goals and Progress Feedback During Reading Comprehension Instruction

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Abstract

This experiment investigated the effects of goals and goal-progress feedback on children's reading comprehension self-efficacy and skill. Remedial readers received comprehension strategy instruction on finding main ideas. Some subjects were provided a product goal of answering questions, others were given a process goal of learning to use the strategy, and subjects in a combined condition received process goals and feedback on goal progress. The combined condition demonstrated significantly higher performance on the self-efficacy and skill tests than the process-goal and product-goal conditions, which did not differ. Combined and process-goal conditions judged perceived progress in strategy learning higher than product-goal children. These results show that remedial readers benefit from explicit feedback on their mastery of a comprehension strategy.

Goals and Progress Feedback During Reading Comprehension Instruction

Schunk and Rice (in press) explored the effects on achievement outcomes of providing remedial readers with a goal of learning to use a comprehension strategy. The conceptual focus of their study was goal setting theory and research, which shows that goal setting involves internal comparisons of standards against present performances (Bandura, 1986; Locke, Shaw, Saari, & Latham, 1981). Proximal (close-at-hand) goals that incorporate specific performance standards promote motivation and achievement better than general goals (e.g., "Do your best"), temporally-distant goals, and no goals (Bandura & Schunk, 1981; Schunk, 1989; Tollefson, Tracy, Johnsen, Farmer, & Buenning, 1984).

According to Bandura (1986), the effects of goals on behavior depend in part on perceived self-efficacy, or personal beliefs about one's capabilities to organize and implement actions necessary to attain designated performances. Self-efficacy affects choice of activities, effort expended, persistence, and achievement. Students with low self-efficacy for accomplishing a task may avoid it; those who believe they are capable should engage in the task. Learners with high self-efficacy work harder, persist longer, and achieve at a higher level, than those doubting their capabilities. Individuals acquire self-efficacy information from their performances, vicarious (observational) experiences, forms of persuasion, and physiological indexes (e.g., sweating, heart rate). Students who adopt a learning goal may experience a sense of confidence for goal attainment, which is substantiated as they work on the task and note progress (Elliott & Dweck, 1988).

Goals reflecting learning products, which concern what students should know or be able to accomplish as a result of learning, can be distinguished from goals reflecting learning processes that focus on techniques and strategies students can use to promote learning (Weinstein & Mayer, 1986). Most goal-setting research has employed product goals (e.g., quantity of work), but educators increasingly emphasize teaching learning strategies, or systematic plans for improving encoding of information and performance (Mayer, 1988; Paris, Lipson, & Wixson, 1983).

Providing students with a process goal of learning a strategy might enhance self-efficacy and achievement better than a product goal. Strategies consist of steps or subgoals, and the perception of progress in mastering subgoals builds self-efficacy. Emphasizing a process goal also might lead students to view the strategy as a means of enhancing achievement. Strategy usefulness can produce diligent application of the strategy and engender the belief of greater control over academic outcomes, which raises self-efficacy (Schunk, 1989). In contrast, a product goal of answering questions may not lend itself to subgoal division, and students might have difficulty determining learning progress. Emphasizing a product goal also may lead students to perceive the strategy as less important to their successes than other factors (e.g., time available, ability) and believe they do not have a great deal of control over outcomes, which will not enhance self-efficacy. Learners who believe a strategy does not contribute much to their successes will not employ it systematically (Fabricius & Hagen, 1984; Paris, Newman, & McVey, 1982; Ringel & Springer, 1980).

Schunk and Rice (in press) tested these ideas while teaching remedial readers a comprehension strategy. Some received a product goal of answering questions; others were given a process goal of learning to use the strategy;

instructional control students were told to work productively. Compared with controls, process and product goal students judged self-efficacy higher and process goal children demonstrated higher skill. Process and product goals did not differentially affect outcomes. Both goals were proximal and specific, which raise self-efficacy and skill. It is possible that the remedial readers were unsure of how well they were learning the strategy. Benefits of process goals might have been obtained had students been given goal progress feedback, which is an important source of self-efficacy information (Bandura, 1988). Explicit information linking strategy use with improved performance seems necessary to promote remedial readers' self-efficacy and skills (Schunk & Rice, 1987).

In the present study, we replicated the Schunk and Rice study except we replaced the control condition with one in which students received the process goal combined with progress feedback. We expected the product and process conditions would not differ and the combined condition would demonstrate the highest perceived progress in learning, self-efficacy and skill.

Method

Subjects

The final sample comprised 30 students from two fifth-grade classes in one elementary school. The 16 boys and 14 girls ranged in age from 10 years 7 months to 14 years 2 months (M = 11.3 years). Although different socioeconomic backgrounds were represented, children predominantly were lower-middle class. Ethnic composition of the sample was 63% Hispanic, 19% Black, 18% White. Teachers nominated children who they felt would not experience excessive decoding problems while receiving comprehension instruction. We limited the sample because the experiment focused on comprehension and decoding difficulties could mask the effects of the

treatments. Excluding these children limits generalizability of results but allows for their meaningful interpretation.

Subjects regularly received remedial reading instruction. They had been placed in remedial classes by the school district because their total reading scores (vocabulary, comprehension) on the SRA Achievement Series (Naslund, Thorpe, & Lefever, 1978) were at or below the 20th percentile (roughly equivalent to Grade 3). Two-thirds of the students were in their first year of enrollment in the remedial program; 53% received some instruction in English as a second language classes. The latter students were close to transition and subsequently were integrated into English language classes.

Materials and Procedure

Except as described, the materials and procedure used during the testing and instructional sessions were identical to those of Schunk and Rice (1987, in press). Each child was pretested on comprehension self-efficacy and skill (20-item tests) by an adult from outside the school. The self-efficacy test assessed perceived capabilities for correctly answering questions that tapped comprehension of main ideas; skill test items required children to answer main idea questions after reading passages. Children were assigned randomly, within sex and class, to one of three treatments: product goal, process goal, process goal + progress feedback (combined). All students received daily 35-min training sessions for 15 school days, and worked on instructional material covering comprehension of main ideas (Cohen & Foreman, 1978). Children assigned to the same condition met in small groups with an adult trainer from outside the school. Reading material included passages followed by main idea questions. Passages were ordered from least-to-most difficult; 40% were appropriate for a second grade class of average reading ability, 40%

for a third grade class, and 20% for a fourth grade class. Difficulty was varied with vocabulary and length.

Students were taught a 5-step comprehension strategy: Read the questions, Read the passage to find out what it is mostly about, Think about what the details have in common, Think about what would make a good title, Reread the story if I don't know the answer to a question. At the start of the first session, the trainer told students they would use the steps to answer questions, and gave instructions appropriate for children's experimental assignment. The trainer verbalized each step and applied it to a passage. She then instructed children to repeat aloud each step after she verbalized it and called on individual children to apply each step. The format for the remaining sessions was identical except the trainer referred to steps at appropriate places and occasionally asked children to verbalize them.

Product goal children were told at the start of each session, "While you're working, it helps to keep in mind what you're trying to do. You'll be trying to answer questions about what you've read." In this and the other conditions, the trainer asked children if the goal sounded reasonable; this was done to promote children's goal commitment. No child in any condition expressed displeasure with the goal. To process goal children, the trainer said at the start of each session, "While you're working, it helps to keep in mind what you're trying to do. You'll be trying to learn how to use the steps to answer questions about what you've read." Students in the combined condition received the process goal at the start of each session, and each child was given progress feedback 3-4 times each session. The trainer delivered feedback verbally with such statements as, "You're learning to use the steps," and, "You're getting good at using the steps."

Perceived progress in learning the strategy was assessed following the last session. Children judged how well they could use the strategy now compared with when the project began. The 10-unit scale ranged from not better (10) to a whole lot better (100). Children received the posttest (self-efficacy, skill) 1-2 days after the last instructional session.

Results

Means and standard deviations are shown in Table 1. Preliminary analyses of variance (ANOVAs) yielded no significant between-conditions differences on pretest measures, or on any measure due to children's sex or class. Experimental conditions did not differ in the number of passages completed during instruction.

Insert Table 1 about here

Pretest-to-posttest changes on self-efficacy and skill were evaluated with the t test for correlated scores (Winer, 1971). Students in the process goal and combined conditions showed significant improvements in each measure; range of $t(9)$ values = 2.50 - 6.21, all ps $< .01$ except $p < .05$ for process goal subjects on skill.

Analysis of covariance (ANCOVA) determined whether there were significant between-conditions differences on posttest self-efficacy and skill. The use of ANCOVA necessitated homogeneity of slopes across experimental conditions (Pedhazur, 1982). Tests of slope differences for each measure were made by comparing a linear model that allowed separate slopes for each condition against one that had only one slope parameter for estimating the pretest-posttest relationship across the three conditions. These analyses found tenable the assumption of slope homogeneity (ps $> .05$).

Posttest self-efficacy and skill were analyzed with multivariate analysis of covariance (MANCOVA); the three conditions constituted the treatment factor and the two pretest measures served as covariates. This analysis was significant, Wilks's lambda = .413, $F(4, 48) = 6.67$, $p < .01$. ANCOVA applied to each posttest measure yielded significant effects: self-efficacy, $F(2, 26) = 6.60$, $p < .01$, $MS_e = 156.08$; skill, $F(2, 26) = 11.60$, $p < .01$, $MS_e = 5.87$. Posttest means were evaluated separately using Dunn's multiple comparison procedure (Kirk, 1982). Students in the combined condition scored significantly higher on the self-efficacy and skill tests than process-goal ($ps < .05$) and product-goal ($ps < .01$) children. Product- and process-goal conditions did not differ on either measure.

ANOVA applied to the perceived progress measure yielded a significant between-conditions difference, $F(2, 27) = 12.01$, $p < .01$, $MS_e = 227.41$. Dunn's procedure showed that process-goal and combined conditions did not differ but each judged progress significantly higher than the product-goal condition ($ps < .01$).

Product-momemt correlations were computed among perceived progress, posttest self-efficacy and skill. Between-conditions differences in correlations were nonsignificant; correlations were averaged across conditions using an r to z transformation (Edwards, 1984). All measures were significantly related: Self-efficacy/skill ($r = .61$, $p < .01$); self-efficacy/progress ($r = .44$, $p < .05$); progress/skill ($r = .36$, $p < .05$).

Discussion

These results replicate those of Schunk and Rice (in press) showing that process and product goals enhance remedial readers' achievement outcomes. The present study also supports Schunk and Rice's (1987) finding that remedial readers benefit from explicit information linking strategy use with improved

performance. Benefits of process goals and progress feedback are not due to instructional differences because all conditions received the same amount and type of instruction. The combined treatment included strategy instruction, a goal of learning the strategy, and feedback on goal progress. These factors, which motivate children to learn, teach them a means of improving their achievement, and convey information that they are improving their skills, provide a sense of control over academic outcomes. Children's belief that they were capable of performing well was validated during instruction as they successfully applied the strategy.

Process goal and combined children did not differ in perceived progress in strategy learning. The progress measure may have been too general to detect differences because it asked students to judge progress in learning the entire strategy. Separate judgments for each of the five steps might yield differences in progress perceptions. Another possibility is that the goal of learning the strategy was made salient to students in both conditions with the goal instructions, and subsequent participation in the instructional program enhanced progress perceptions. The present study cannot disentangle these influences, but it seems clear that increases in self-efficacy and skill depend on more than perceived progress in strategy learning. Progress feedback enhances self-efficacy beyond the effect of goal instructions.

The present study increases our understanding of learning processes among remedial readers, but the results have limited generalizability. Better readers typically assess their purpose in reading and employ learning strategies, whereas students with comprehension difficulties may not work on tasks systematically (Paris et al., 1983). Good readers also are more likely to monitor their comprehension successes and difficulties; remedial readers benefit from explicit sources of information linking systematic efforts with

improved performances. This is not to suggest that good readers could not benefit from goal setting, strategy instruction and progress feedback, but rather that these procedures are particularly useful for students with learning problems (Hallahan, Kneedler, & Lloyd, 1983; Licht & Kistner, 1986; Schunk, 1989).

This research supports the idea that self-efficacy is influenced by one's performances but is not merely a reflection of them (Bandura, 1986). Though conditions did not differ in the number of exercises completed during instruction, combined-treatment children subsequently judged self-efficacy higher. This study also shows that self-efficacy bears a positive relationship to comprehension performance. The present findings have implications for teaching. Integrating goals and progress feedback with strategy instruction can be accomplished easily during small group reading instruction. Simply providing students with goals may yield few benefits. Process learning goals and progress feedback seem well suited for enhancing remedial readers' strategy learning to promote skills and a sense of self-efficacy for learning.

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Table 1

Means (and Standard Deviations) by Experimental Condition

Measure	Phase	Experimental Condition		
		Product Goal	Process Goal	Combined
Self-Efficacy	Pretest	59.1 (9.8)	63.0 (9.1)	62.2 (12.2)
	Posttest	69.8 (18.6)	71.1 (9.7)	88.5 (7.7)
Skill	Pretest	6.9 (2.7)	6.5 (2.4)	6.1 (1.9)
	Posttest	8.0 (2.7)	8.7 (2.2)	11.6 (2.7)
Progress	Posttest	61.0 (20.8)	83.0 (11.4)	86.0 (11.0)

Note. N = 30; n = 10 per condition. Self-efficacy means represent the average judgment per question; range of scale is 10(low) - 100. Skill means represent the number of correct answers on 20 questions. Range of progress measure is 10(low) - 100.